

CLAIMS

I CLAIM:

1. A method for providing added weight to geothermal piping for insertion in a vertical geothermal well, the weight comprising a material having a density greater than material found in the vertical geothermal well and a material that is approved by appropriate organizations for contact with ground water, the method comprising affixing the weight to an outside of the geothermal piping.
2. The method of claim 1 wherein the weight comprises:
 - (a) a ferrous material; and
 - (b) a coating over an entire surface of the weight comprising a water impervious material.
3. The method of claim 2 wherein the water impervious material comprises polyethylene.
4. The method of claim 2 wherein the water impervious material comprises a powder coating.
5. The method of claim 2 wherein the ferrous material comprises steel.
6. The method of claim 2 wherein the ferrous material comprises cast iron.
7. The method of claim 1 wherein the weight comprises concrete.
8. The method of claim 1 wherein the weight comprises a vessel filled with sand.
9. The method of claim 8 wherein the vessel is a pipe.

10. The method of claim 1 wherein a plurality of weights are stackable, end to end.

11. The method of claim 10 including the step of coupling the weights together
5 such that rigidity of the geothermal piping is enhanced.

12. The method of claim 1 wherein said weight is elongated and has a cross sectional shape of a modified receptive square.

10 **13.** The method of claim 12 additionally comprising the steps of:
(a) affixing the geothermal piping to first and second sides of the modified receptive square; and
(b) affixing a tremie pipe to a third side.

15 **14.** The method of claim 13 wherein the first and second sides are opposite one another on the modified receptive square.

15. The method of claim 14 wherein, considering cross sectional shape of a modified receptive square, two pegs lie on a first line of symmetry, said pegs being
20 symmetric about a second line of symmetry and two sockets, sized to receive said pegs, lie on the second line of symmetry, said sockets being symmetric about the first line of symmetry.

16. The method of claim 15 wherein a plurality of weights are stacked end to end,
25 the method additionally comprising the steps of:

(a) engaging the pegs from an end of a first weight into the sockets in an end of a second weight; and

(b) engaging the pegs from the end of the second weight into the sockets in the end of the first weight.

17. The method of claim 1 wherein the step of affixing the weight comprises hanging the weight below an elbow at a bottom of the geothermal piping.

5 18. The method of claim 17 wherein the weight comprises a concrete weight.

19. The method of claim 1 wherein the step of affixing the weight to the piping comprises taping the weight to the geothermal piping in a plurality of locations.

10 20. The method of claim 1 wherein the step of affixing the weight to the piping comprises clamping the piping to the weight with clamps.

21. An apparatus for providing added weight to geothermal piping for insertion in a vertical geothermal well, the apparatus comprising an elongated member comprising a material denser than material found in the vertical geothermal well and a material being approved by appropriate organizations for contact with ground water.

22. The apparatus of claim 21 wherein the material denser than the material found in the vertical geothermal well is a ferrous material and the material that is approved by appropriate organizations for contact with ground water comprises a coating over an entire surface of the ferrous material, said coating comprising a water impervious material.

23. The apparatus of claim 22 wherein the water impervious material comprises polyethylene.

24. The apparatus of claim 22 wherein the water impervious material comprises a powder coating.

25. The apparatus of claim **22** wherein the ferrous material comprises steel.
26. The apparatus of claim **22** wherein the ferrous material comprises cast iron.
- 5 27. The apparatus of claim **21** wherein the weight comprises concrete.
28. The apparatus of claim **21** additionally comprising:
- (a) a plurality of weights; and
- (b) couplings at each end of each weight for stacking the plurality of weights
- 10 end to end.
29. The apparatus of claim **28** including means to couple the plurality of weights together to enhance rigidity of the geothermal piping.
- 15 30. The apparatus of claim **21** wherein said elongated member has a cross sectional shape of a modified receptive square.
31. The apparatus of claim **30** additionally comprising:
- (a) means for affixing the geothermal piping to first and second sides of the
- 20 modified receptive square; and
- (b) means for affixing a tremie pipe to a third side.
32. The apparatus of claim **31** wherein the first and second sides are opposite one another on the modified receptive square.
- 25 33. The apparatus of claim **32** wherein, considering the cross sectional shape of a modified receptive square, the apparatus additionally comprises:
- (a) two pegs lying on a first line of symmetry, said pegs being symmetric about a second line of symmetry; and

(b) two sockets, sized to receive said pegs, lying on the second line of symmetry, said sockets being symmetric about the first line of symmetry.

5 **34.** The apparatus of claim 33 wherein a plurality of weights are stacked end to end, the apparatus additionally comprising:

- (a) means for engaging the pegs from an end of a first weight into the sockets in an end of a second weight; and
- (b) means for engaging the pegs from the end of the second weight into the sockets in the end of the first weight.

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35. The apparatus of claim 21 additionally comprising a hanger for hanging the weight below an elbow at a bottom of the geothermal piping.

36. The apparatus of claim 35 wherein the weight comprises a concrete weight.

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37. The apparatus of claim 31 wherein the means for affixing the geothermal pipes to the modified receptive square comprise tape wrapped about the geothermal pipes and the modified receptive square.

20 **38.** The apparatus of claim 31 wherein the means for affixing the pipes to the modified receptive square comprise clamps.

39. The apparatus of claim 21 wherein the weight comprises:

- (a) a vessel of material approved by appropriate organizations for contact
25 with ground water;
- (b) sand filling said vessel; and
- (c) couplers attached to each end of the vessel for coupling a plurality of said vessels end to end, the couplers also providing rigidity at points of coupling.

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40. The apparatus of claim 39 wherein the vessel of material approved by appropriate organizations for contact with ground water is a pipe.